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The Agricultural Student

The HOME JOY

Precious the home, though but a rifted rock
Where way-worn shepherd carries with his flock!
Precious the friendly covert, though it be
Only the shelter of a lonely tree.
Dear is the world-old, warm, heart-pulling thing—
To man and beast and bird one gladdening.
Dear is the roof, the hole, the lair, the nest—
Hid places where the heart can be at rest.

But home will sweeten as the years go by,
Greatening the soul and lifting the low sky—
When beauty shall step downward from her star
To smile away the blemish and the scar—
When science shall draw down Orion's band
To ease the burden of the woman's hand—
When all the power on earth and air and fire
Shall be the lackeys of the heart's desire.

Yes, home will sweeten in the coming days,
When widening love shall warm these human ways—
When every mother, pressing to her face
Her child, shall clasp all children of her race.
Then will the rafter and the oaken beam
Be laid in music and the poet's dream—
Then earth, as far as flies the feathered foam,
Shall have in it the friendly feel of home.

—Edwin Markham.

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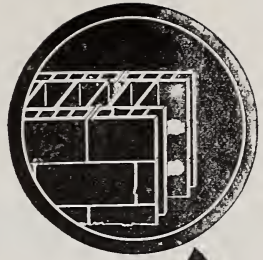
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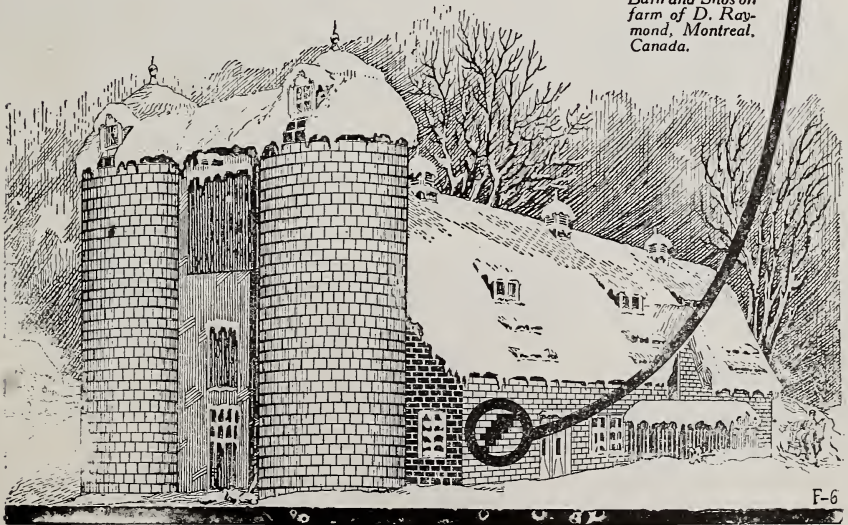
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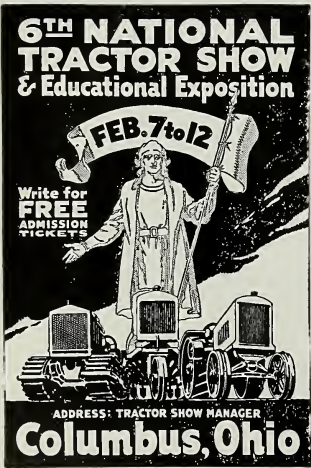
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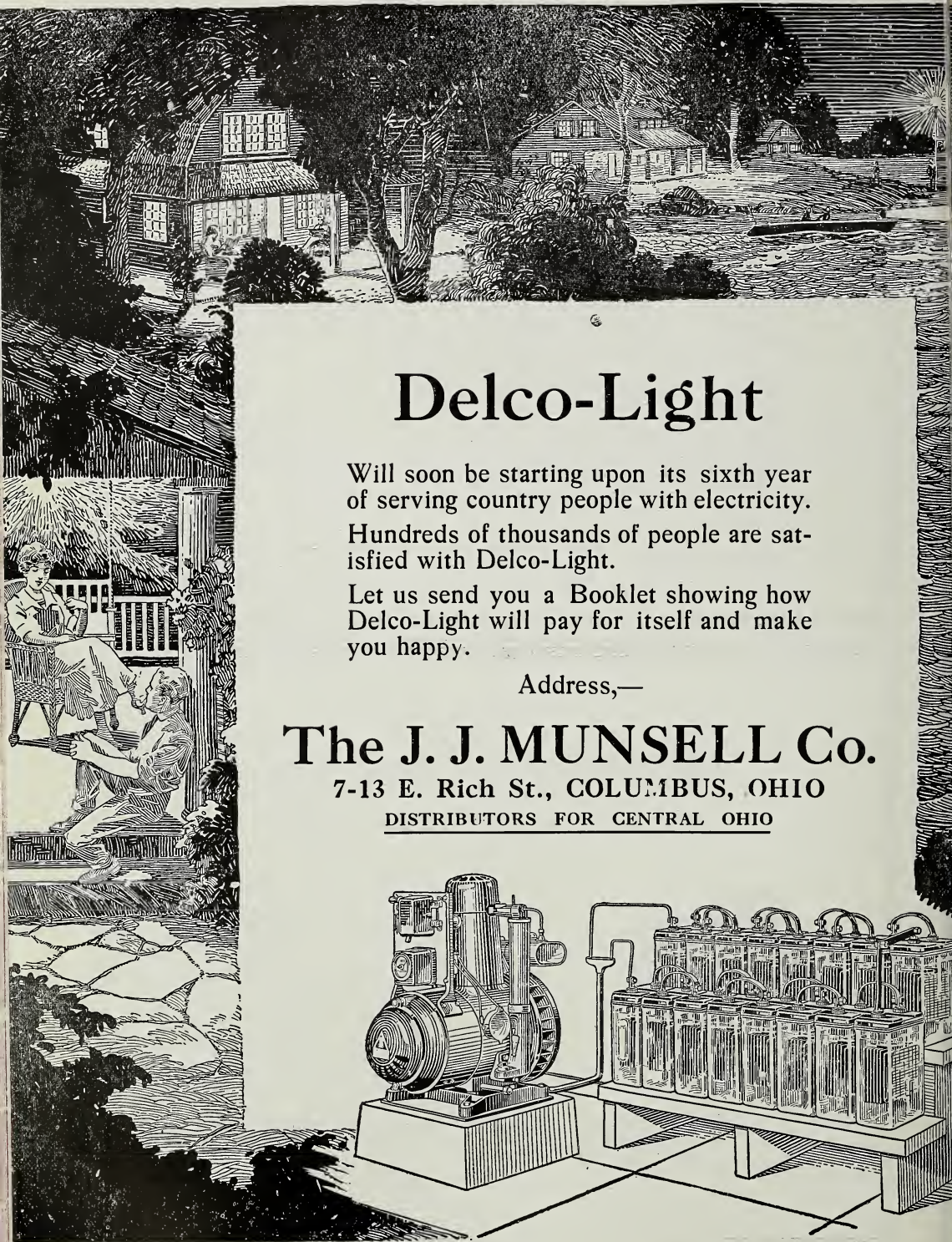
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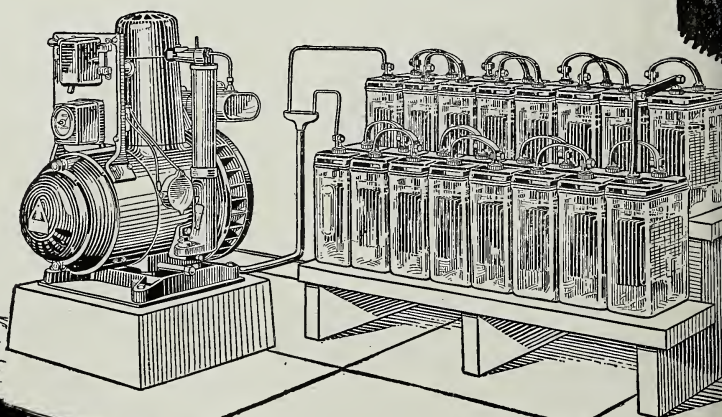
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The Agricultural Student

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No. 6

THE LAND GRANT COLLEGES AND THE EDUCATION OF WOMEN

By ISABEL BEVIER.

THE education of women is a subject of perennial interest, particularly to men. It has long been the battleground of many conflicting opinions. In order to better appreciate the contribution of Land Grant Colleges to the education of women, it may be well to review briefly some salient points in the education of women in the United States prior to the founding of the Land Grant College.

Investigation shows that the present status of the education of women, however interpreted, is the outgrowth of many conflicting opinions. Out of many notable contributions to the education of women made by women, three at least deserve honorable mention in this connection. Emma Willard had the vision to see and the courage to say, "The character of children will be formed by their mothers and it is thru the mothers that the government can control the character of its future citizens." So, she sought state appropriation for her work. Mary Lyon saw all life thru the religious lens and simplified life by one dominating purpose—the glory of God, but this meant also the best development of the individual and education was a mighty factor in this service. Catharine Beecher, with the prophetic insight associated with that family, supplemented by study and travel, saw the hopelessness of the situation for women unless housekeeping could be made respectable, unless it could be connected with the funda-

mental science for a basis and so interest the brain as a compensation for tired muscles. Her desires crystallized in 1852 in the organization of the American Woman's Educational Association "to aid in securing to American women a liberal education, honorable position and remunerative employment," or, in the vocabulary of today, economic independence for women.

From this review it would appear that several points about woman's education were settled by 1865. First, that coeducation was a safe experiment. In this battle Ohio has an honorable record. Oberlin was the first college to open its doors to women. Second, that the work at Mt. Holyoke had borne fruit and a real college for women, Vassar, was about to be opened. Third, the pioneer life had necessitated comradeship in work and made possible comradeship in education. It would appear that the time was ripe for a new instrument of education that should embody these ideals.

We come now to the work of the Land Grant College in the education of women.

The colleges were born in the minds of men who had the vision to see life whole and large. The Land Grant College was a protest against the narrowness in education as the statement, "while not excluding classics, but adding agriculture and mechanic arts," shows. These leaders recognized that a democracy demands that all the people

be educated and that a task so great could be met only by national resources, so, it seems to me, the first contribution which the Land Grant College made to Home Economics was latitude in education, breadth.

A glance at the beginnings of our Land Grant Colleges shows that in the decade between 1865 and 1875 the greater part of them were founded and that almost immediately the doors of those in the West were opened to women. It is difficult to overestimate the importance of this second contribution to the education of women. It is a far cry from the time when Noah Webster in his "Letters to Young Ladies" exhorted them "to be content to be women, to be mild, social and sentimental," to the statement made by the Secretary of Agriculture in his report of June 30, 1897, as follows:

"Among the educational movements which in recent years have engaged the attention of the public, none has been received with greater favor than the attempt to introduce into the schools for girls and women some systematic teaching of the arts which are practiced in the home. Many colleges of agriculture and mechanical arts, together with scientific, technical, and industrial schools, now maintain a department of domestic science. Cooking and sewing are quite commonly taught in public schools and cooking schools for women have been organized in various places. While useful instruction in these lines is imparted it is generally recognized that much remains to be done before the teaching of domestic science can assume its most effective form.

Thru correspondence with Land Grant Colleges it appears that the pioneers in the work were Iowa, Kansas and Illinois, that the first two have

maintained some form of work in Home Economics since 1869 and 1873, respectively, and that Ohio State University has maintained this work since 1896.

In the early days the Land Grant Colleges gave not only elementary courses in Home Economics, but provided for its further development by making a place for it in the graduate school of Agriculture.

The demand for carrying the instruction of the agricultural college to the farm was soon followed by the request that it be taken also to the home and to the homemaker. It is a marvelous accomplishment of which most of us have no adequate conception that the women **thru the length and breadth** of the land may get thru their connection with the the Land Grant Colleges, the latest **scientific facts** about the problems of their daily life. The extension service with all its faults is a tremendous contribution to education.

In 1914 the Smith-Lever Act caused Agriculture and Home Economics to be written side by side in the records of the nation. Thru this means the Federal Government proclaimed that it realized that the success of farm life was to be judged not only by the numbers of flocks and herds or bushels of corn and wheat, but also by the character of the home life on the farm.

The Land Grant Colleges have given not only equipment, courses of instruction and training of teachers, but a large body of literature of inestimable value to the students of Home Economics. Scientific studies in the chemistry of food, physiology, specific investigation in meat, milk, wheat, wool, cotton, furnish a wealth of information to the students of Home Economics.

So much for Home Economics in the

Land Grant Colleges in the last fifty years. What of the present hour? What shall the Land Grant Colleges do for Home Economics in 1920? What Robertson says about sacrifice seems to me applicable to the Land Grant Colleges. "Do right and God's recompense to you will be the power of doing more right. Give and God's reward to you will be the spirit of giving more."

Our country life must be not only attractive in its material setting, but there yet remains much to be done in bringing to the dweller in the country an appreciation of the beauty of that environment. The child must be taught a love for country life and for country

activities. The war has emphasized the part that recreation plays in the well-ordered life. Our Land Grant Colleges and Home Economics have much to do in the way of glorifying the daily task and showing the possible beauty of its setting. We may not paint great pictures nor see the painter work on canvas, but let us at least learn to look for and to find in the beauty of the earth and the sky that which shall lift us above the pettiness and littleness of the daily round. Let us make life satisfying, comfortable, and inspiring. This is to be no superficial contribution, but one that can come only from careful,

(Continued on page 298)

HOUSEHOLD LINENS

By K. LOUISE BOYNTON, Inst. Textiles Home Ec. Dept.

It is authentically reported that the last Belgium flax crop is a failure. That means that the American housewife must, perforce, economize in household linens. The supply offered on our markets is very slowly returning to something like the pre-war state, but more time will now be needed, in the face of the Belgian shortage, to bring back true normal conditions. At the same time, of course, prices will be prevented from rapidly declining. These facts give us a real reason for surveying the field of household linens.

Under this head will be briefly considered bed linens, table linens, kitchen linens, bath room linens, in regard to the supply, substitutes, laundering, economies possible.

In the good old days, not far away, beds were spread with sheets of beautiful linen, appealing to both the eye and touch. Now, for very definite reasons, those of cotton have supplanted those of linen, except in certain special

cases. First in the list of causes is expense. While the cost of linen has increased, that of cotton has declined; secondly, while the quality of linen has weakened in some respects, that of cotton has been greatly improved, in color, texture and weave, if not so markedly in wearing qualities. Thirdly, perhaps because of these reasons stated, fashion no longer demands that the housewife have a great supply of real linen on her shelves. Linen has grown more scarce, cotton has become more abundant. Pillow cases and sheets of real linen are most attractive when freshly laundered. But cotton wrinkles less easily, therefore bedding of this fabric is more pleasing after it has once been used, before it is appointed to be laundered. This naturally brings up the next point to be considered — the laundering. Linen, to bring out the utmost beauty, needs careful ironing and must not be too dry. Cotton sheets, and even pillow cases in emergencies, if

properly hung on the line, fully dried, and carefully folded, do not require ironing, or at most need have only the hem smoothed. Why iron all the benefit of fresh air out of them? Simply avoid putting in masses of wrinkles. This is an economy of time, energy and fabric, for the life of materials so treated will be lengthened.

A further economy in the buying of unbleached sheeting. By putting the cloth in cold water and bringing the temperature slowly to boiling, then repeating the process, most of the color will be removed. A few trips thru the laundry will complete the bleaching. For single beds a great saving is the use of ten-quarter sheeting having the hemmed edges along the sides, sacrificing the looks of the thing. Hems, themselves, are a matter for consideration. Energy, time, and wear on sheets are saved by making hems of the same width at top and bottom, about one and three-fourths inch. A common-sense view of the matter ought to convince us that we may change from the prevailing standard when a real reason motivates us.

Just as cotton has largely replaced linen as a fabric for bedding, so, to quite an extent, it is used for table linen. The Japanese luncheon squares offer a vast saving in money, time, and labor. Furthermore, they do not offer the chief objection to cotton, excessive lint, and a very "cottony" look. Mercerized cotton, when the mercerization has been properly carried out, has many of the characteristics of linen, besides just "looks." It has the gloss, a little of the "feel," some of the strength and ease of laundering that linen has. Too much cannot be said in favor of luncheon sets, and doilies, of whatever fabric they may be made, as savers of our

strength and time. Many of us have to be educated to appreciate the beauty of the bare table, but it can be done, even to the exclusion of the large cloth, except for "company." That should not be allowed to happen, tho, for, just as red table cloths and no napkins engender "red linen" table manners, so a certain let-down in carefulness may follow the informality that seems to come in the wake of too constant use of luncheon squares.

For the kitchen, more than for elsewhere in the house, there is real need for linen, if the housewife insists upon drying her dishes, lintlessly, in place of draining after thoroly rinsing off the soapy water with a boiling hot shower. As hand toweling, linen stands supreme, because of its high degree of absorption, coupled with its ability to rapidly yield moisture, and the relative ease of laundering. It is much harder to get grime out of cotton. Cold water and a mild white soap, by the way, will often do a great deal as a preliminary or complete laundering for cottons, especially those not boilable. Large sugar sacks offer a means of economizing in the kitchen, using these for all ordinary purposes, reserving a few glass toweling for glassware.

For the bath room, union toweling either of huckabeck or crash, is a real economy to the housewife. If the admixture is of linen and a good mercerized cotton, the resulting cloth will prove quite satisfactory. It will absorb and launder very well. Buying Turkish toweling by the yard and hemming it at home, will cut the cost, and perhaps increase the quality, of both towels. Worn towels, of huck, crash or Turkish toweling may be utilized for wash cloths, by cutting the firm cloth into pieces of the desired shapes and

sizes, and hemming. All household linens seem to withstand laundering better if hemmed by machine, instead of by hand.

Out of the war has come a real need for economizing. By facing this need squarely and appreciating the ad-

vantages that cotton and especially mercerized cotton fabrics do have today over the materials formerly put on the market, and over linen in regard to expense, the housewife can find ways for effecting a real saving.

VALUE OF VOCATIONAL HOME ECONOMICS

By CLARICE CHAMBERLAIN, Ashtabula, Ohio.

THE Smith-Hughes Bill which brought into existence Vocational Home Economics training for women and girls has facilitated and hastened a great advance in education.

There are three types of schools provided for under the Smith-Hughes Bill:

The part time school, which is for those who are permitted to be in school only a part of the day and must work the remainder.

The night school for those women and girls who must work all day, but desire such work a certain number of nights each week.

The all day school where vocational training is offered in the high school curriculum.

Since statistics show that 95% of the women of this country marry sooner or later, is there not every reason why they should be trained in that vocation which is theirs for life? When we see what poor housekeepers and homemakers many women are, we feel the need for vocational training in home economics, in order to forestall the otherwise inevitable course in the school of bitter experience.

The training of a high school girl has always caused confusion in the public mind.

The majority of girls do not take advantage of higher education. The training which they receive in high

school plus a few weeks or months work in a special school, prepares them for their supposed short service in the world of work. Assuming that such services are short, would only tend to emphasize domestic training based upon the value of the home in the community. Then there is the girl who goes out from high school as a bread winner without any special preparation. She is a member of an unskilled, unorganized group, who accepts poor wages, long hours and invokes a lower standard of living. Thus if girls of high school age and older can be made to see the value of vocational training as homemakers, this training can be made to cover all the relations of life.

To encourage Vocational Home Economics to the exclusion of all other vocational training is not advised. Business, professional and trade experience, are all to be desired and serve as a potent factor in developing a woman into a broad minded, intellectual wife and mother.

As a result of the three types of schools provided in the Smith-Hughes Bill it is possible to reach every type of girl and thus enable her to become a benefit to society and a better citizen.

Therefore the real value of Vocational Home Economics is to help girls become ardent promoters of the welfare of the community by being skilled homemakers.



OF
OHIO STATE UNIVERSITY
A Medium for Exchange of Ideas Between College and Farm

HOME ECONOMICS

This issue, perhaps, needs a word of explanation. An agricultural magazine seldom features this field of work, but we feel that the increasing importance of this department, coupled with universal suffrage, makes it of utmost necessity to direct attention toward the commercial possibilities available.

Existing conditions evidence a marked trend in an unfavorable direction, as far as the home is concerned. It is therefore an urgent need to exploit and know this field so that ample openings may be found for the added number of women workers.

A PROBLEM

A. Lawrence Lowell, a noted writer on educational subjects, recently said, "The mechanical practice of credit for courses is the gravest defect in American education." Does this affect us in any way? In the graduate school the rule is to pass or not to pass. In other schools a large per cent of the students make grades their goal, as the business man, erringly, makes the dollar his, rather than knowledge and service. Naturally Ohio State is not an exception. To remedy this defect is the work of the experienced educators, and thus we urge them to action. Perhaps inquiry, along this line, will solve the knotty problems confronting campus reformers, thus ending much undesirable publicity. The new four term plan just adopted by the University may open a way toward a solution.

GOVERNOR'S INAUGURAL ADDRESS

As we read the new governor's inaugural address, we are inspired by the space and promises given to Ohio State University and the Agricultural Element; altho our first and foremost work at present is our school work, yet beyond that our interest and effort will be with the Farmers.

The tax question, promising no more burden on the farmers unless they so desire it locally, is in direct line with rural opinion. The rural highway system and its economic effect on the consumer as well as the producer should be sincerely considered, thinks the governor. Greater and better marketing facilities are also mentioned in his promise, as is the need for library facilities in the rural districts where they are now wholly lacking.

About the University, the new chief executive of Ohio says: "In the

Ohio State University, the commonwealth has an educational institution which should become the largest and best state university in the United States, . . . and I propose . . . to attain that goal in the not too far distant future." This is quite a contrast to the retiring governor's view; for he has never been considered as any too good a friend of the students of the University.

A man who is "big" enough to be chosen by the people of this great commonwealth, to the highest office within their power, surely is not a man of promises only; but will strive with the greatest effort possible to fulfill his promises.

THE TRACTOR SHOW

In an address before the national assembly of Agricultural Engineers, John R. Howard, president of the American Farm Bureau Federation, attributed the high standard of citizenship maintained by the American farmer to his use of modern machinery which enables him to do more work in less time than the European peasant, thereby gaining more time for moral, social and political development.

This strikes the keynote to a situation which is brought to our attention with the coming sixth annual tractor show at Columbus. Herein we find an institution, popularly termed a "show,"—the term still bearing its intimation of a scheme of salesmanship,—but far removed from the apparent meaning of the word in that the demonstration is to be purely informational and educational to the users and prospective users of farm machinery. This innovation brings to light a new relationship between the implement manufacturer and the farmer. It is hardly expected that these manufacturers are supporting this show with no hopes of reimbursement for the million dollar outlay but theirs seems a sincere effort to really aid the farmer in being an intelligent user of machinery, and, being intelligent, consequently an efficient and, above all, a satisfied user. Herein lies mutual benefit, with good will and prosperity for the manufacturer and satisfaction and service for the farmer. Success to the Tractor Show!

AN INVENTORY

Farming offers more different kinds of work for the individual than any other business. This is especially true of the small farm. The farmer must be a mechanic to care for the tractor, and other machinery; he must know how to feed and care for all kinds of livestock; he must know the needs of the growing crops; and above all he is his own business manager.

Just now, during these long winter days when the chores are the only immediate care of the farmer, is the time to sum up and then look ahead towards the new year's management. It is possible when he is toasting his shins before the fire to take paper and pencil in hand and to actually use his head for a few hours to draw plans and figure out how many unnecessary miles he is traveling each year.

Why not take a simple inventory and keep records of your next year's work. Figures seldom lie and they might surprise a few farmers. With this in mind do not forget the business of farming when you are studying something new about machinery or better methods of animal breeding.

ANIMAL HUSBANDRY

J. GLENN BATES, Editor; E. L. HAWKS, Assistant.

LIVE STOCK CONDITIONS IN EUROPE

Inasmuch as the European demand for American live stock and live stock products is a factor which must be considered in all our live stock operations during the period of readjustment, the condition of the live stock population of Europe is a subject of vital importance to American stock growers.

The general impression in this country was that during the period of the war, flocks and herds of Europe would necessarily be depleted by the ravages of the conflict. This belief to a great extent was true, but on the other hand we found some variation and developments since the signing of the armistice which have indicated that the live stock of Europe has been preserved to a much greater extent than had been anticipated. There was a decrease in the total number of horses, cattle, sheep and swine in the ten countries of western Europe and prices were higher than in pre-war times. The farmers taking advantage of the high prices, culled their flocks and herds and as a result, only the best young animals were retained.

France and Italy were affected most of any of the European countries due to the fact that they were located in the midst of the fighting district. Of these two countries the situation of Italy was much the most serious but an increase in the number of sheep and goats from 1914 to 1918 was shown. This has been partially accounted for by an increase in grass lands due to decreased cereal production and in small-

er amount of labor required in their growing. In England on the other hand there was a decrease in grass lands and a corresponding decrease in the number of sheep and goats while horses during the same period showed an increase.

From the foregoing paragraph it can readily be seen that the European countries show remarkable variations but as a whole show a decreased production, the most important cause of which was perhaps the limited amount of concentrated feed available. While flocks and herds are being reestablished, there is little doubt but that Europe will depend on outside sources for its meat supplies and will import them until the shortage resulting in live stock due to the war has been made good. The inability to buy, the difficulty of obtaining credits, and the fluctuating rate of exchange, however, are factors which will tend to limit the amount of food to be purchased from outside sources and will tend to stimulate production at home.

NEW PROJECT OF THE UNITED STATES ARMY

So much progress has been made in the United States Army's new project for encouraging breeding of horses among farmers and stockmen of the country that plans are now under way to triple the Government's breeding service for this year. Congress has appropriated \$250,000 for the work.

According to an announcement by Major P. C. Harris, Adjt. General of the Army, about 1,000 mares belonging

to civilians and to the government in different sections of the United States were bred last season. These mares were generally divided into two classes: First, a well bred type of riding animal ranging from 1000 to 1150 pounds in weight. Second, a rather drafty type of active mare showing a lot of quality with good neck and shoulders and weighing from 1150 to 1300 pounds.

The Breeding Committee of the American Remount Association, made up of some of the most prominent horsemen and breeders of the country has entered enthusiastically into the Army's program and all have volunteered their services to help and advise in any possible manner. The horses are to be established in such Governmental breeding centers and in such localities as conditions warrant. The Army requirements are three fold. First, these breeding centers must be located in places where there is sufficient number

of suitable mares for raising riding horses which may be used as a source of cavalry and artillery mounts. These mares should be active and well built and weigh from 1000 to 1250 pounds.

Second, farmers, horse owners and stockmen of the locality must indicate a desire to breed light horses, because the stallions are not intended to serve heavy draft mares.

Third, for making any locality an Army breeding center there should be general interest in horse raising throughout the community, not among horsemen alone, but the farmers generally.

The War Department insists that these Government stallions and mares be shown at all state and county fairs where possible in order to stimulate production. As a result of this new plan the Army expects to breed several fine types of horses which should have good markets and be a stimulus to horse production in general.

MATTIE'S WASHING MACHINE

By MADGE GRUBB.

WHEN the buggy wheels left the hard-packed mud road for the scarcely smoother paved street, Old Prince pricked up his ears, gave his scanty gray tail a youthful flirt and broke, unurged, into a trot. Against the buggy seat John Patterson knocked the ashes from his corn-cob pipe, and gathered the reins together. Mrs. Patterson smoothed the lap-robe. They were coming into town.

A kind of cloak of affable formality seemed to descend upon John Patterson. He had sat in heavy, calculating silence all the way; but now he observed genially that the Methodists were painting their church, and he calculated that

the frost must not have been so heavy in town, for the leaves were pretty well on yet. He looked from right to left for chance acquaintances to speak to. He remarked that there weren't many out on the streets this morning.

Mrs. Patterson dutifully took into consideration all the observations of her husband, echoing him in submissive little monosyllables; but her eyes came back each time to his face. Within them burned the light of a mighty purpose.

"What time'll you want to get started back, John?" she inquired meekly.

"Oh, long about half past eleven, I reckon," he replied magnanimously.

He even added, "S'pose you can get all your wants in that length o' time, Mattie? Got enough money?"

Oh, yes, John, I have two dollars and forty-some cents. That'll be plenty—for the little things. An' I can easy be ready by half after eleven. But, John, I was just thinkin'—

"Well now, if there ain't Willis Brown! How-de-do, Willis," shouted John, nodding his head and his whip in a most friendly manner to an old man on the sidewalk.

Mrs. Patterson nodded and spoke, too, then glanced sharply at her husband.

"I was just thinkin', John, that I'd look at some washing machines, this morning. I'd just like to look at them, John."

A pained look came over John's face, as he turned and glared at his shrinking wife. In this base fashion she had taken advantage of his good humor.

"Now what the Sam Hill do you want to be lookin' at washing machines for? What good'll that do you, I'd like to know?"

"I was just thinkin' you might buy me one, John, since Lem White is going to give you the money for the hogs today."

John snorted vehemently.

"Huh, that's it, is it? Well, you have another think comin'. The money for them hogs goes into a new binder, and I don't want to have to listen to nothing more about any washing machine. Now that's final!"

He had pulled up by a hitching post in front of the grocery store. John got out at his side of the buggy and went around to the horse's head. Mrs. Patterson crawled out unassisted and stood brushing gray horse-hairs from her black plush coat, while John blank-

eted the horse. She took a bright-colored market basket from under the seat and turned to go.

"I s'pose I'll be up at Borland's store when you are ready to start, John," she said meekly.

"You'll come right here to the buggy, so we can get started home in good time," ordered John. "I'll be here 'long about eleven and I don't want to be kept waitin'."

Just then a tall, heavy man in a greasy black suit came out of the grocery store.

"Well, how-de-do, Mrs. Patterson," he said, coming over to the buggy. "How are you, John? I see you brought the Missis along to help you blow in that hog money. Well, well!" And his hearty laugh boomed along the village street.

"Good morning, Lem," answered John, swallowing his ill humor and beaming in his best town manner. "Yes, she come along, when she found out I was gettin' some money. You know how the women are, Lem."

Lem White roared again.

"That's right, Mrs. Patterson," he said. "Get all you can out of him."

"I thought—we thought we might buy a washin' machine today," remarked the little woman, looking across the street.

"Fine, fine!" boomed Lem.

John turned down street.

"I was going right over to the bank to look for you, Lem," he said. He stopped, and shot a furious glance at his wife.

"We want to start home about eleven," he said.

"All right, John," compliantly replied Mattie. "I'll be up at Borland's more than likely. Maybe you had best look for me back in the hardware room."

I shouldn't wonder that is where I'll be, John."

A close observer might have noticed John open his mouth as though to speak and then close it helplessly. For a minute he stood watching his wife's retreating figure; then he followed Lem White down the street in the direction of the bank.

When at the bank Mr. Fuller called him "John" most fraternally and invited him and Lem White into the directors' room to transact their business, John's urbanity flowed again. The process of receiving the money for the hogs consumed little time; but he found several other little matters that demanded his attention, such as verifying check stubs and making sure whether those last bonds he had bought were fours or four-and-a-half. John would refer to all this later under the impressive term of "business at the bank." He and Lem and Mr. Fuller did quite a bit of talking, too, with the topic varying from bonds to the government and from the government to the coming election, Lem puffing at a black cigar and the bank president lolling over the hissing steam radiator. Withal John left the bank with the feeling that they had some respect for old John Patterson there, and so they had, and well they might have, for his business there meant a pretty figure to them in a year.

At McMillan's hardware store where he went to see about binders, he found there were none in stock; but they did have several sales books full of pictures and prices. Moreover, there were several men sitting around the stove who seemed to know quite a bit about binders, and were just as willing to talk about them as about anything else. John made no effort to give them the

impression that buying a binder was an every day occurrence with him; but he did allow the men to gather that he was "comfortable" enough to pay a good price for a binder when he was buying one. He carried a couple of the sales books away with him and promised to come in, within a week or so, when he had decided which one he wanted.

Having several other little things to attend to and chancing to meet several friends who were willing to stop for a word or two, John did not get back to the buggy until half-past eleven. Old Prince was standing dejectedly on three legs, his blanket trailing in the dirt. Mattie was not there, nor was she on the street nearby, not even on the steps of Borland's general store. John stowed his assorted packages under the buggy seat, removed Prince's blanket, folded it carefully on the seat and put on his driving gloves. Then he waited. He knew Mattie's little trick, and resolved it was not going to work this time. He kept his eyes on the swinging door of Borland's store and waited.

At a quarter of twelve, John saw Abe Tinker come out of the store and down the street toward him. Abe was John's nearest neighbor, and they were rivals as only farmers can be rivals.

"Mornin', John," said Abe.

"Well, mornin', Abe," responded John.

"Jest now seed the Missis up at Borland's," said Abe.

"Yes, she come along to town this mornin'. She was out some things for around the house."

"Said as how you'd come to town to buy a washin' machine," observed Abe.

John turned around and spat in the ditch.

(Continued in March issue)

VOCATIONAL AGRICULTURE BOYS' AND GIRLS' CLUB WORK, ETC.

E. B. BARKER, Editor; J. A. MALICK, Assistant.

NEW TEACHERS

Mr. Vance Clever, who finished his work at the University last semester, accepted the position as vocational agriculture instructor at Coshocton.

Mr. A. E. Shanklin has accepted a similar position at Jefferson, in Ash-tabula county. He finished his work at the University in summer school last year but did not accept a position at the beginning of the school term.

Both of these men began teaching the first of the month and judging from the fact that both are experienced teachers it is thought that they will make good. The Agricultural Student is wishing them both the best of success.

G. G. Everhart and D. O. Stough are both prepared to teach but as yet neither of them has accepted a position.

V. G. Applegate, '18, who has been teaching at Grand Rapids, has recently bought a 160-acre farm near Sidney which he will manage next year.

J. R. McAnall has just finished his initiation into the teaching profession by doing his practice teaching at Grove City under the direction of Mr. Ken-nestrick.

Winter short courses are being organized in a large number of the departments, which extend from 2 to 8 weeks in length.

The departments at West Milton, Bethel township, Brookville, and Lanier township, recently held a livestock judging contest on a farm near Brookville. First place was awarded the Bethel township team.

Departmental banquets are becom-

ing more and more frequent and are proving to be an excellent means of acquainting the parents and the community generally with the work of the vocational departments. Recent gatherings of this kind which have been successfully arranged have been at Gallipolis, Plattsburg and Washington C. H.

Forty of the vocational teachers of the state responded to the roll call during the program of vocational teachers at the O. S. T. A. held in Columbus during the holidays. The new officers elected for the organization were: C. H. Ross, '17, president; M. L. Jordan, '18, vice president, and Ralph Richardson, '18, secretary.

PEANUT CROP IS BIG FARM FACTOR

Peanuts have become important as a money crop, despite the decided slump in acreage and the resultant yield last year. The total farm value on December 1, 1919, was \$79,839,000, or only \$90,000 less than the total value in 1918, according to data just announced by the bureau of crop estimates of the United States Department of Agriculture. Furthermore, the popularity of the peanut is shown by the large importations from the Orient during the last few months. The yield of this crop has greatly increased since 1870, when it was first heard of commercially. In the United States it has increased to 11,964,109 bushels from 516,000 acres since 1899. In 1918 the yield was 45,886,000 bushels from 1,861,000 acres.

Summary of Club Demonstration or Project.

Club Demonstration (Project)	Organized Clubs.	Groups finishing as standard clubs	Enrollment.	Members reporting.	Value of products.	Total costs, exclusive of labor.	Total value above costs.
Corn -----	6	---	49	32	2,588.9	* 653.54	1,935.36
Potato -----	10	---	58	32	1,054.88	* 697.59	657.46
Garden -----	11	---	104	30	1,590.32	* 302.65	1,287.67
Pig -----	185	20	1,273	1,096	59,042.98	37,234.08	21,808.90
Pig (sow and litter) -	6	1	52	42	10,080.00	4,056.00	6,014.00
Dairy Calf -----	8	1	254	204	51,000.00	10,200.00	40,800.00
Beef Cattle -----	8	2	153	133	46,550.00	11,970.00	34,580.00
Steer Feeding -----	3	---	79	79	10,045.84	3,160.00	6,885.84
Sheep -----	1	---	5	4	988.00	210.00	778.00
Poultry -----	97	12	683	376	10,548.86	5,480.26	5,068.00
FOOD CLUB							
Canning -----	338	105	3,227	1,329	39,821.80	27,861.68	11,960.12
Bread Baking -----	---	---	---	---	2,592.11	2,073.69	518.42
Cooking -----	---	---	---	---	22,693.50	14,248.50	8,445.00
Clothing -----	148	22	1,685	723	9,741.50	3,463.86	6,277.64
Totals -----	821	163	7,622	4,072	268,338.69	121,312.11	147,026.58

*Includes labor cost.

A glance at the table showing the summary of club work for the year 1920 shows material value of the projects to the boys and girls but this is perhaps the least important result of the year's work. The experience of a completed project in the various clubs is exerting a great influence on the rural boys and girls. Many club boys and girls are beginning to see the opportunities in farming as they have never seen them before. Boys and girls who are undertaking projects in connection with their farm and home life and who are working their problems out together in their club groups and club activities are becoming trained for successful rural leaders and citizens. Club work has had a very high educational value as no boy or girl can have the experience of working on a project without learning the essentials of that project and how it connects up with their life. It is simply a learning by doing process. The doing provides the interest and interest is the natural and easy basis of all learning. The fact that 4000 boys and girls completed their project out of 7000 who actually began

making 57% finishing as compared to 43% last year, shows a steady growth in better county organizations and leadership. Many communities are beginning to realize the opportunity of training afforded through club work and are beginning to realize the responsibility on their part in making the work a success.

TACTLESS

The other day a woman entered the office of ——— and asked him to be her lawyer in a divorce case. She said she had been married only a day.

"Married only a day, and you want a divorce?" grasped the lawyer incredulously.

"Yes," insisted the woman and explained:

"When my husband came home from the office I was crying. He asked why, and I said:

"'Oh, John, I baked a lovely cake and put it out on the porch for the frosting to dry, and the dog ate it.'

"And John said, 'Don't cry, dear, I know a man who will give us another dog.'"

CONTROL OF EGG PRODUCTION BY THE USE OF ARTIFICIAL LIGHT

By G. S. VICKERS, Instructor in Poultry Husbandry at Ohio State University.

ARTIFICIAL light has become one of the most important factors in the control of egg production. The shifting of the period of high production from the spring when eggs are cheap, to fall and winter when they are expensive, is sure to be an important factor in the seasonal supply of fresh eggs. During these times of high priced feeds the producer cannot well afford to overlook any means whereby he can increase his income. Where used with judgment artificial light is sure to be a profit maker for the person using it, for the simple reason that it gives him a great many more high priced eggs at a very nominal increased cost of production. In the future it should play a large part in the development of the poultry industry in this state and should prove to be one of the poultryman's most profitable enterprises.

The "why and wherefore" of the use of artificial light is very often not properly understood. The whole explanation is simply a matter of stating that it is just a means of getting the hens to consume more food out of which to make more eggs. We can approximate summer conditions in the winter very closely with the exception of the length of day and with the use of artificial light we can overcome this difficulty. This being the case there is no reason why we should not get eggs in the winter and this is just what we accomplish by the use of artificial light. We give the hens the same foods as she gets in the summer and in addition give her long enough days to consume sufficient amounts of them.

With a little thought it will be clearly seen that the use of artificial light does

not create unnatural conditions but on the other hand it simply creates natural conditions. The original home of the domestic fowl was near the equator where she had approximately a twelve hour day thruout the entire year in which to exercise and consume food. When she is transferred to more northern latitudes such as we are in she is subjected to days as short as nine hours in the winter, which is clearly an unnatural condition for her. As a result of these shorter days she is unable to consume sufficient amounts of food and get sufficient exercise to manufacture large numbers of eggs. This change of conditions changes her habits and during the time of such short days she simply hibernates until spring when the days become longer and conditions begin to get more natural for her again and she becomes active, takes more exercise and consumes more food. The result of this change back to her natural conditions is the production of large numbers of eggs. How can you expect a hen to lay very many eggs if she doesn't have time enough to eat food to make them out of? You wouldn't expect to get lumber out of a saw mill unless you put logs in. The same rule applies here, you can't get something for nothing. The heavy consuming hen is the heavy layer or vice versa the heavy layer is the heavy consumer.

Artificial lighting, like everything else, can be overdone and must be used in connection with good judgment. The amount to use is the all important factor in deciding the success or failure of the project. No specified amount can be set down as being the right amount to use for all flocks under all conditions

regardless of age, breeding, feeding, management, etc. Obviously the amount to use will vary with the conditions, particularly as regards age, older birds requiring more light than pullets. Since all flocks do not perform the same without lights we could not expect all to perform the same with lights. The amount of light to use will vary from twelve to fifteen hours, daylight and artificial light combined. This point will have to be decided only after all conditions are thoroughly understood and is an individual problem. Don't go on the theory that if a little is good a large amount is better. Don't push the birds so you get a sixty or seventy per cent production thereby causing a spring molt. Be content with a forty or forty-five per cent production thru the winter and in this way avoid a spring or summer molt and in the end secure a large yearly production. There is no question but that over lighting or sudden changes in the lighting will cause a molt. Make all changes very gradual and in this way play the game safe.

The time the light is given is not so important as it is to see that they get the proper amount at a regular time. There are several systems in use of which the following are the most used: morning only, evening only beginning at dusk, a short period during the latter part of the evening. Any of these systems can be used according to which is the most convenient. Where only morning light is used a much simpler time switch can be used, one that will simply turn the lights on. Where evening light is used some sort of dimming device is necessary. The grain is fed in the litter the evening before so it is there when the lights go out. Dry mash should be kept in hoppers available at all times. The busy hen is the happy hen so give her plenty to do in the win-

ter when she would otherwise be inactive.

Peppy Pointers

By Powers.

Its a long, long way to Heaven,

Or at least it seems to be.

But a kiss from a certain Home Ec.

Would sure be Heaven to me.

No Mabelle the mines that were put in the sea during the war are not used for coaling stations.

You can't drive a nail with a sponge, no matter how much you soak it.

Virginia has teeth like pearls, however, that's not saying she's as mum as an oyster.

Divorce—Something that knocks the K out of knot.

Mamma, why has Papa no hair?
Because he thinks so much, my dear.
But why have you so much?
Because—oh, go away and play, you naughty boy.

She—I think you married me for my money.

He—Well, I've earned it by this time, I guess.

Some girls prefer the highbrow stuff, others the low neck.

The humble part I play in life,
Does not much help my self esteem.
But in the diary that I keep,
You'd be surprised how grand I seem.

HOME ECONOMICS

DAISIE CHLOE CUNNINGHAM, Editor; LILLIE SWANSON, Assistant.

DOMESTIC ENGINEERING

The steadily increasing use of mechanical labor-saving devices about the home and the increasing need of mechanical knowledge on the part of the women of the homes that use these new devices make up the two main reasons for the organization of the new field of Domestic Engineering. This new term embraces such subjects as water supply, sewage disposal, light and power, home conveniences and equipment, and household engineering and mechanics. It includes practically all things mechanical about the household and the premises immediately adjoining the house. In the work that the Agricultural Engineering Department has been doing along this line the idea has been uppermost that it was the *farm* home that needed these things and so the greater efforts have been given to that end. We therefore hear the terms, farm water supply, the septic tank, the farm light plant, farm home conveniences, etc., spoken of more often than the general headings first mentioned.

There is no measure to the opportunity that stands waiting for workers in this field. The interest shown by the 20,000 people who visited the Home Convenience Train which toured the State last year is evidence that people of the farms are ready for these things. They are waiting to be instructed and advised in the matter of securing these conveniences for their homes. The organization of any work in Domestic Engineering has in mind the need that exists for instruction and advice in the

selection, installation, and care of these utilities so necessary to the farm home.

Lectures and demonstrations in water supply and sanitation have made up most of the extension work done so far by the Department of Agricultural Engineering. The work is rapidly taking on the lines of home planning and management, and studies in the better use of laundry equipment. Teaching work on the campus, just started this year, embraces the two subjects of household equipment and household mechanics which are broad enough to include the more important items in all of the general headings first mentioned. Interest in these courses shows at once the need and the desire on the part of farm women for mechanical instruction that will enable them to use and operate the many mechanical devices that are now ready for use in the farm home.

The work in Domestic Engineering has only started. The opportunities ahead are practically unlimited. The demand exists. The people are persuaded. Laborers are needed.

P. B. POTTER.

OLD FURNITURE MADE NEW

The long winter days are the best time for making over old furniture around the house. The modern painted furniture that looks so attractive in the stores owes its appearance to paint. A little grey or white enamel will soon convert an old, dingy piece into a new and stylish adornment. Chairs, tables, or other pieces of which the grain of the wood stands out can be touched up and preserved with varnish stain, giv-

ing any desired effect. Almost every attic contains some article of furniture which has been discarded because of its appearance or some easily repaired break. At the present cost of things, it is the best economy to repair and repaint and remember by "saving the surface" you save all.

COLOR IN DRESS

Knowledge of both the physical and spiritual self as well as the principles of color are necessary if we are to express ourselves beautifully through our clothes. Daily we make combinations of colors in our costumes relying on our taste alone without knowing how or why and making it most often a painful process instead of a most pleasant one.

While we would not think of performing in public with a slight knowledge of music and harmony we are continually giving public color concerts with our dress. These may be beautiful symphonies which sooth and uplift both ourselves and others or may be the most clashing "jazz."

Nothing is more beautiful than pure color when it is successfully used. As a rule intense color looks best when used as an accent for a costume of more neutral color or when combined with black, white or gray. It is charming in an out-of-door sport costume where it is properly balanced by the large neutral background of nature and raised in key by the strong sun light. However, bright, vivid colors are best reserved for youth and those who are growing old should delight and be delighted in the soft, misty and less intense colors.

Every woman must be willing to give thought to the study and application of color to her dress. She must bear in mind that the average observer gets his

first and perhaps last impression of her through the taste which she displays in her costume.

ALMA KNAUBER.

A soiled black coat can be effectually cleaned by sponging the surface with a solution of strong coffee to which a few drops of ammonia have been added. When the coat has been gone over carefully with the sponge it should be dried by being rubbed well with a colored woolen cloth.

For furniture cleaning, a mixture of three parts of linseed oil and one of turpentine is splendid. Use only a small quantity at a time, rubbing well and polishing with a dry cloth until all the oil is rubbed into the wood or removed. Use a woolen rag.

Boots and shoes intended for rough wear during the winter months can be made waterproof if treated in the following way: Melt together two parts of beeswax and one part of mutton fat. Apply to the leather at night and leave for twenty-four hours. Then wipe off with a soft flannel. When first blackened the boots will not polish easily, but if the blacking is sparingly applied and allowed to remain on a few minutes they will take a good gloss after being cleaned once or twice.

TOO COSTLY

A negro who had an injured head entered a doctor's office. "Hello, Sam. Got cut again, I see." "Yes, sah. I done got carved up with a razor, doc." "Why don't you keep out of bad company?" said the physician, after he had dressed the wound. "Deed I'd like to, doc, but I ain't got 'nuff money to git a divorce."

Tribute to Abraham Lincoln

TO the younger generation, Abraham Lincoln has already become a half-mythical figure, which, in the haze of historic distance, grows to more and more heroic proportions, but also loses in distinctness of outline and feature. This is indeed the common lot of popular heroes; but the Lincoln legend will be more than ordinarily apt to become fanciful, as his individuality, assembling seemingly incongruous qualities and forces in a character at the same time grand and most lovable, was so unique, and his career so abounding in startling contrasts. As the state of society in which Abraham Lincoln grew up passes away the world will read with increasing wonder of the man who, not only of the humblest origin, but remaining the simplest and most unpretentious of citizens, was raised to a position of power unprecedented in our history; who was the gentlest and most peace-loving of mortals, unable to see any creature suffer without a pang in his own breast, and suddenly found himself called to conduct the greatest and bloodiest of wars; who wielded the power of government when stern resolution and relentless force were the order of the day, and then won and ruled the popular mind and heart by the tender sympathies of his nature; who was a cautious conservative by temperament and mental habit, and led by the most sudden and sweeping social revolution of our time; who, preserving his homely speech and rustic manner even in the most conspicuous position of that period, drew upon himself the scoffs of polite society, and then thrilled the soul of mankind with utterances of wonderful beauty and grandeur; who, in his heart the best friend of the defeated South, was murdered because a crazy fanatic took him for its most cruel enemy; who, while in power, was beyond measure lampooned and maligned by sectional passion and an excited party spirit, and around whose bier friends and foe gathered to praise him—which they have never since ceased to do—as one of the greatest and the best of men.—*Schurz's Essay, Last Paragraph.*

THE CAMPUS ECHO

H. W. HARSHFIELD, Editor; MERRILL CONN, Assistant.

MORE ROOM IN SIGHT

Ohio State University has fallen in line with other educational institutions by asking for new and larger appropriations for more equipment. Although Ohio State now has over 8,000 students and is still growing her equipment is barely large enough for 5,000. Of the \$3,945,000 asked for in the new appropriation \$369,000 is for a new agricultural building, \$47,000 for a horse barn, and \$85,000 each for a dairy cattle barn and a beef barn. These buildings with the sheep and hog barns which have already been provided for will supply the much needed agricultural equipment.

A. S. A. E.

The Ohio State society of A. S. A. E. boasts of having 22 out of the 26 paid up members in the United States. The agricultural department although comparatively young at O. S. U., has been growing by leaps and bounds. Fortunately this department acquired the aviation building as soon as the war came to an end. This furnishes a fine laboratory room for farm machinery. The enthusiasm of the engineering society speaks well for the department.

HOME EC. ENGINEERS

The latest course at O. S. U. makes a mash with the Home Ec.'s but the mash is only for the fingers. This accounts for the female faces in the agricultural engineering building. This magnificent course includes the overhauling of a washing machine. In one corner may be seen an engineeress garb-

ed in greasy overalettes and with a monkey wrench in hand. She is trying to remove a cotter pin from the differential of the washer. In the other corner a similarly clad figure has a cold chisel and is regulating the carburetor on the wringer which regulates the flow of clothes. Over there a sweet feminine voice has let out an oath. When she started to crank the washing machine the self-starter kicked. This course has been planned in view of preventing all divorce cases. No more will man be required to wash his own socks and skin his knuckles on the wash board. So far no provision has been made for supplying clothes pins. Statistics show that 20,000,000 feet of lumber are consumed annually in the manufacture of these necessary articles. It is easily seen that this course will revolutionize the clothes pin industry. Let us have more of these courses that make for the happy American home.

FOUR TERM PLAN

A plan for running school all year round has been submitted to the state budget commissioner. The new system effective July 1, will allow the students to graduate more quickly. The new plan will be especially convenient to students of agriculture; as they may either go two terms or quarters a year, at a time more convenient to them, or if they wish to, may go straight through, completing a now four-year course in three years.

Carl E. Steeb secretary of the board of trustees, stated:

"The long vacation is a tradition founded not on reason or on sound principle, but on the convenience of primitive conditions where education was an incident of the winter period when nothing else could be done." The convenience of the plan, it is hoped, will allow more students of Agriculture to take the four-year course instead of the short course.

DR. MORREY ATTENDS MEETING

Dr. Charles Morrey of the department of bacteriology, was in attendance at the meeting of the society of American Bacteriologists held in Chicago the last week of December. He presented two papers at this meeting. One on "Vaccines and Serum in Coccus Infections," giving conclusions on work with the organisms for the past 10 years and the second written on results of study of 310 cases of pneumonia observed in various camps and hospitals during the war; the latter written in collaboration with Professor Vera McCoy Masters of the same department.

NEW COURSE GIVEN

A new course of "marketing fruits and small vegetables" is about to be installed in the curriculum of the Agricultural college. The new course will take up the marketing from the producer to the consumer. It will supply a needed place in the study of conditions that must be met as they exist today.

ALIVE OR DEAD?

"Is the Saddle and Sirloin Club still an organization on the campus?" Someone has remarked. This question should be answered in some way to prove its existence. Who can?

ALUMNI

Professor Frederick A. Fenton, '18, is associate chief of the division of entomology at Iowa State Agriculture College.

Herbert L. Andrews, '15, of Dayton, is the county agent of Auglaize county.

Arthur S. Kiefer, '15, Columbus, is a faculty member of North High School, Columbus, Ohio.

Karl E. Eichorn, '15, is managing a large poultry farm at Chesterland, Ohio. He is doing some very notable work.

Charles E. McAnall, '15, Mt. Gilead, is farming at home.

Melby W. Brady, '18, is the "Boys' and Girls' Club" leader of Muskingum county.

Marcisco Jiminez, '18, is doing government work in the Philippine Islands. While at State he studied in the dairy department.

Wendell P. Miller, '19, of Sunbury, is connected with the agricultural extension department at Ohio State. After leaving college he helped organize a farm engineering company and remained with that project until he came back to Ohio State.

Enid Plottner, '20, is the proprietor of the "Little Chef," a tea room at Findlay, Ohio.

Mary Hedges, '20, is engaged in teaching home economics at Marblehead, Massachusetts.

Hilda Rogers Prickett, '20, is living at Andalusia, Alabama. Her address is R. D. No. 1.

Helen Steele, '20, entered Philadelphia General Hospital at Philadelphia, Pa., on October 1st, as a student dietitian.

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FARM MANAGEMENT

RURAL LIFE, ETC.

B. P. HESS, Editor.

LOCATING FARM BUILDINGS

Location of farm buildings is of the greatest importance in saving time and labor. A different problem is present on different farms, so that it is impossible to lay down hard and fast rules for locating farm buildings. Local conditions, such as natural drainage or slope, will affect the location to a great extent. The following suggestions for the location and arrangements for farm buildings should be taken into consideration:

1. The farmstead should be conveniently located with respect to the fields.

2. The farmstead should be near an improved road.

3. The barnyards and lots should be well drained, either by natural drainage or tiles.

4. Eaves troughs emptying into drains or cisterns will eliminate much mud in barnyards.

5. An exposed hill is undesirable, but a south slope is to be desired.

6. A timber windbreak will prove valuable on the north and west of the farmstead.

7. The buildings should be grouped around a central courtyard.

8. The corncrib and granary should be convenient to the barn and hoghouses.

9. A water supply must be available. Running water in house, barns and yards is a great convenience.

10. Barnyards should not face the house or road.

11. The barn and yards should be

150 to 200 feet from the house, and not in the direction of the prevailing winds.

12. The house should be set well back from the road to avoid the dust.

13. The house should command a view of the barn door, the front entrance from the door, and the central courtyard.

14. The shop and implement shed should be handy to both house and barns.

15. The poultry house may be nearer the house than the other buildings, but should be so placed, if possible, that the chickens will not overrun the yard.

16. The planting of shrubs in corners improves the appearance of the farmstead.

17. Good fences are to be advocated.

18. All buildings and fences should be kept painted and in good repair at all times.

19. Concrete walks from road to house and from the barns to the house will eliminate the tracking of dirt into the house.

It will not be possible to include all of these suggestions in one farmstead, but as many as possible should be used.

THE GRANGE AND THE TARIFF

The National Grange reaffirmed its long declared position on the question of a protective tariff by the following resolution, unanimously adopted at Boston: "Whereas, The Grange has long declared for the principle of exact justice to agriculture in all matters of



What Does Your Feed Cost Per COW?



What does it cost you to feed your cows?

It depends entirely on **how** and **what** you feed them. The only way you can figure feed costs is to deduct the cost of feed from the value of milk production.

If you feed your cows sparingly and try to economize on feed, your feed costs will be high because the first use made of the feed your cows consume goes to provide bodily maintenance and leaves little for milk production.

But if you feed the **right** kind of feed liberally—give your cows sufficient to provide them with both bodily maintenance and milk-producing nutrients, your feed cost will be low. That's why

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fed according to the Schumacher Feeding Plan have become so universally popular with dairymen and farmers everywhere.

Schumacher Feed, the world's greatest carbohydrate feed is composed of the **right** kind and variety of grains to supply bodily maintenance—to keep cows in tip top shape physically—provide them with energy—stamina, etc. while Big "Q" Dairy Ration, the renowned high quality protein ration, supplies the needed food nutrients to be converted into milk.

This combination fed liberally **reduces** feeding costs because it **increases** health condition and milk production. You can prove it to your own satisfaction and profit by making a test with any cow. The results will be gratifying and make you a strong advocate of the Schumacher Feeding Plan—the plan that costs less because it produces more. Ask your feed dealer

The Quaker Oaks Company

(D-7)

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tariff legislation demanding 'tariff for all, or tariff for none;' and Whereas, this principle is violated by legislation now on the statute books; therefore, be it

Resolved, That we demand that the product of the farmer's toil be given equivalent tariff protection along with the products of industry."

BILLS BEFORE CONGRESS

The following bills of outstanding interest to the farmer are either before Congress or soon to be introduced:

The Kenyon-Anderson Bill.—Providing for the creation of a commission which shall regulate the operations of the meat packers, through a system of licensing.

The French Truth-in-Fabric Bill.—Would require manufacturers of woolen fabrics to label their products in such a way as to show the final consumer the percentage of wool and the percentage of shoddy used.

Standard Containers (Vestal Bill).—A bill to standardize baskets, hampers, and other containers of fruits and vegetables, requiring them to conform to well known and easily recognized sizes and shapes, thereby eliminating confusion and fraud.

The Kahn-Wadsworth Bill.—Authorizes the government to operate the air fixation nitrate plant at Muscle Shoals, Alabama, for the production of nitrate for fertilizer.

The Nolan Bill.—Is a bill drafted and backed by labor and others designed to shift a much larger share of the tax burden on the shoulders of the farmer. The bill provides a flat tax of one per cent (in addition to all other taxes) upon all land values in excess of \$10,000, excluding, however, the value of all buildings thereon.

A German Credit Bill (Smith Bill).—Congress will be asked to grant a credit to Germany approximating a billion dollars, to be used in buying agricultural products and other raw materials in their country, this being approximately equal in amount to the funds now held by the Alien Property Custodian.

The Townsend Highway Bill.—Farmers favor a national road policy which will provide farm-to-market roads rather than "through" roads, designed principally for long distance touring and hauling. The present Federal Aid system, involving the 50-50 principle whereby the Government stimulates road building by matching state and local funds, is believed to be better suited to meet the roadbuilding needs of the country as a whole than is the "through" road plan proposed to the Townsend Bill. Due provision must be made, however, for "through" roads in undeveloped sections.

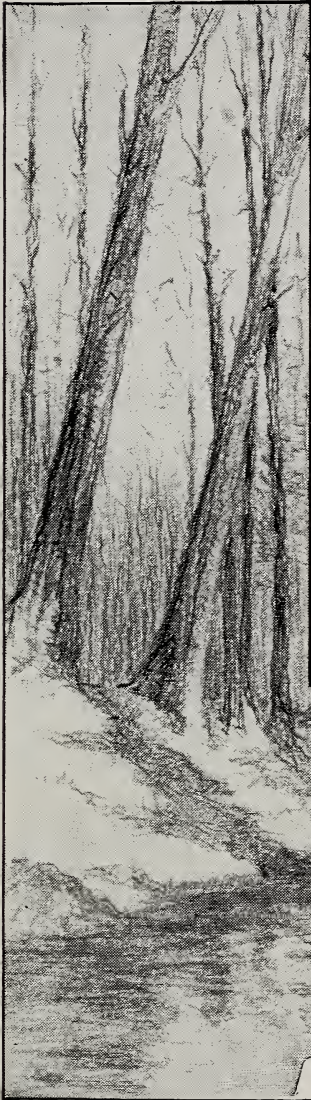
Farm Financing Measures.—The Federal Loan Act must be strengthened and extended. All questions of the constitutionality of the tax exemption feature must be removed.

The Federal Reserve Act.—Must be amended so as to permit of freer and more direct access to the benefits of the act by producers of Agricultural products.

The Rural Credits Bill.—Embodying the necessary features to provide operating funds to worthy farmer borrowers not having ordinary commercial banking credit must be provided.

Besides these, bills supporting a protective tariff on food stuffs, adequate financial support for the Department of Agriculture, and the taxation of profits instead of the taxation of capital, are under consideration.

This Ditch Was Dug With **HERCULES DYNAMITE**



AS an alumnus or a student of an agricultural college you will be interested in this ditch—the time required to dig it, the number of men on the job, the cost and the results accomplished.

The letter reproduced below gives concrete evidence of the important part played by Hercules Dynamite in reclaiming a large tract of swamp land. The illustration was copied from a photograph and shows the type of land through which the ditch was blasted and the effectiveness with which Hercules Dynamite did the work.

The Hercules Powder Co. is anxious to cooperate with agricultural college men and will gladly answer any questions you may have in regard to the use of dynamite in agricultural work. The company has published a 68-page book, "Progressive Cultivation" which is a condensation of the knowledge and experience of the men in its Agricultural Service Department. You will find information in this book that will be invaluable to you in your work. Mail the coupon today and "Progressive Cultivation" will be sent free of charge.



HERCULES POWDER CO.

903 Market Street

Wilmington

Delaware



Osceola, Ark., March 19, 1920.

Hercules Powder Co., St. Louis, Mo.

Gentlemen: On Nov. 10, 1919, your Agricultural Service man, Mr. H. W. Stoddard, with five of my men, blew a ditch six hundred feet long and six feet deep and twelve feet wide in three and one-half hours at a total cost for labor and dynamite of \$140.00.

This ditch will drain about 35 acres of the most fertile soil, thus enabling us to cultivate this land which failed to make a crop last year. Since the making of the above ditch, my friends and myself have purchased 60,000 lbs. of dynamite for the purpose of blowing ditches.

Yours truly, (Signed) E. E. DRIVER



HERCULES POWDER CO.

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Gentlemen: Please send me a copy of "Progressive Cultivation."

I am interested in dynamite for _____

Name _____

Address _____

AGRICULTURAL ENGINEERING

G. W. TIMMONS, Editor; F. R. BOOKMEYER, Assistant.

SIXTH ANNUAL TRACTOR SHOW —EDUCATIONAL EXHIBITION

The buildings at the State Fair Grounds are fast being remodeled for the Tractor Show which is to be held February 7-12. Carpenters have been working for the past two and one-half months making the changes. The set of buildings are admirably located so that all of exhibits can be seen without going out into the open. All the buildings are connected with completely enclosed walks so after one boards a street car for the fair grounds he need not worry about weather at the exhibition grounds.

All of the space allotted has been sold. There will be 170 different exhibits which will include 40 tractor companies who will exhibit over 100 different types and sizes of tractors. There will be ten different exhibits of threshers and numerous other exhibits of tractor accessories. The entire show will cost the industry nearly \$1,000,000. This exhibition will far surpass all previous shows in magnitude and with additional features such as service booths in each exhibit, moving picture shows of power farming and an extensive educational program.

This is a World's Fair of Power Farming and whether or not you are interested in this phase of farming it will be time well spent in taking a day or so off and attend the exhibition. Free tickets to the show can be secured from any tractor dealer in your community or if he is unable to supply you, write direct to the Tractor Show Manager, Hotel Deshler, Columbus, Ohio.

FOURTEENTH ANNUAL MEETING OF THE A. S. A. E.

"The best meeting yet!" Such was the common sentiment of those who attended the recent annual convention of the American Society of Agricultural Engineers in Chicago, December 28 to 30. Many papers were presented and freely discussed. The meeting comprised men from the agricultural colleges, experiment stations, U. S. Department of Agriculture, and practical engineers from various companies manufacturing agricultural machinery and equipment. Ohio State was represented by Prof. F. W. Ives, Virgil Overholt, R. R. Thomson and W. P. Miller.

F. N. G. Kranich, president, emphasized the great strides which agricultural engineering had made in the past few years and its present importance in modern farming. That this fact is realized and appreciated is emphasized by a 70% increase in membership in the A. S. A. E. over that of the last year.

Much interest centered about the pertinent necessity for the standardization of agricultural machinery. Without doubt this is a subject deserving of much attention and cooperation on the part of agricultural engineers. It is one of the valuable functions of such an organization as the A. S. A. E. to provide the stimulus, cooperation and means for the working of just such problems as this.

S. H. McCrory, of the U. S. Dept. of Agriculture, emphasized the necessity for some method of collecting and correlating information on the various lines of experimentation and research

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conducted by the various federal and state institutions. His thought was that the A. S. A. E. was the logical channel through which this work could be accomplished and he recommended that a section of the association be created with representatives from the various colleges, experiment stations, and U. S. Department of Agriculture for this purpose. The proposition was approved by the meeting and Prof. Ives appointed chairman of a committee to take up the matter.

Professor Ives presented a valuable paper on "Psychological Tests for Technical Efficiency in Agricultural Engineering." Use of such tests during the war developed much interest in their practical application. In his paper Prof. Ives pointed out some interesting results of his work along these lines at Ohio State.

The coming tractor show at Columbus came up for discussion during the meetings and the society decided to equip a booth at the show with a representative from all the agricultural colleges featuring an educational exhibit. Prof. Ives was chosen chairman of a committee on arrangements to this end.

E. A. White, technical editor of "The Farm Implement News," was elected president for the ensuing year and F. P. Hanson, secretary-treasurer.

ROBERT R. THOMSON.

After reading an article in the Literary Digest on "Why Motor Cars Run Better at Night," we are inclined to think more of our own conviction that they really do, and not agree with our ag engineering professor who says that he "used" to think that himself.—B. P. H.

The best apples are not on the ground, it pays to climb.

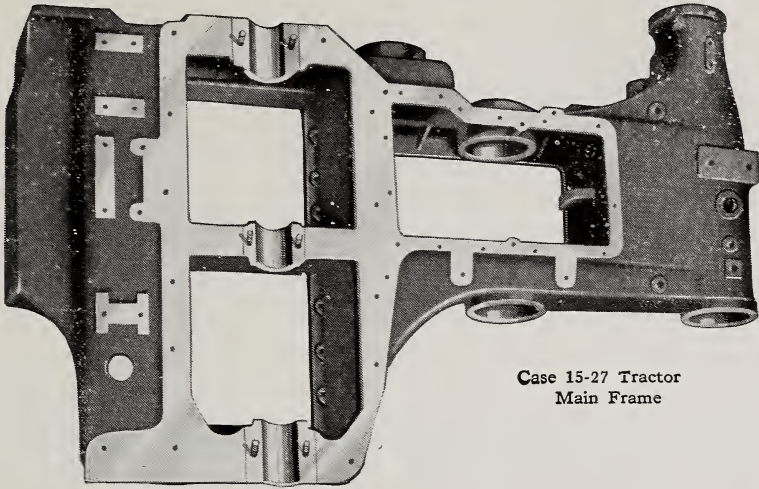
COMING SOON.

Through the efforts of Prof. G. W. McCuen, Ohio State students will have the opportunity to hear one of the most unique lectures ever given on a subject pertaining to agricultural engineering. While visiting the University of Wisconsin recently Prof. McCuen heard a lecture and witnessed the accompanying stereopticon slides and motion picture films given by C. A. Bacon of the Oliver Chilled Plow works. The lecture summarized the results of years of experimentation carried on by Mr. Bacon in an effort to ascertain the proper depth, speed, and mouldboard type with which to plow. His accompanying slides showed with surprising vividness the condition of the ground as it appeared in furrow cross-section. A motion picture film taken over a continuous period of ten days and showing a grain of corn in the process of germination is another feature of Mr. Bacon's intensely interesting lecture.

Prof. McCuen declares that this is by far the best illustrated lecture of its kind. The local student branch of the A. S. A. E. is laying plans for an "open night" on a date to be announced later at which Mr. Bacon's lecture will be the major attraction. The open night will be held in the chapel and the whole university will be invited.

OIL FOR TRACTORS

One of the most baffling problems confronting the tractor manufacturers, as well as one of the most important ones in the efficient operation of a tractor, is the question of the proper type of oil to use. A tractor motor, working as it does, on never less than eighty percent load, and varying from that on till the load becomes so great that the engine is actually stalled, pulling over rough uneven ground, where the



Case 15-27 Tractor
Main Frame

The Importance of a Good Frame

The main frame is the foundation of a tractor. On it are mounted the engine, bearings, shafts, axles and their attachments. It is absolutely necessary, therefore, that the frame be designed and built with the outstanding fact in mind that upon it, basically, depends the continuous satisfactory operation of the tractor.

The main frame of Case 10-18 and 15-27 Kerosene Tractors is cast in one piece and is absolutely rigid and twist-proof. Three-point suspension permits all four wheels of the tractor to follow irregularities in the ground when working in rough fields, without subjecting the frame to twisting strains.

Our frame houses the rear axle, and bull pinion shaft, constitutes the main part of the crank case and transmission case, and contains the bearings for all these parts. Because of this composite housing feature, permanent alignment of shafts, gears and bearings is assured. This feature also provides easy accessibility to the principal working parts. Our main frame construction prevents deflection. This is one reason why Case Tractors last longer.

Next to the engine, the main frame should be the most important consideration in selecting a tractor.

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RACINE

WISCONSIN



This is No. 2 of a series of brief treatises covering correct tractor design and construction. Keep a complete file for future reference. Students interested in tractor engineering are invited to visit the Case factories at Racine and learn the details of tractor construction at first hand.

traction is uncertain, or running a belt driven implement in the face of a cold wind which keeps the temperature at almost prohibitive low levels, presents a very complicated lubricating problem.

As an answer to this problem several brands of motor oil have recently been placed on the market, each claiming to solve the difficulties of tractor lubrication in their own individual way. One of these brands is now in the process of testing by A. M. Hedge and J. P. Cornell, seniors in the Department of Agricultural Engineering.

The object of this test is to show whether or not this oil has any influence on the fuel economy, amount of carbon deposited in the cylinders, temperatures maintained within the motor, and some indication as to the lasting quality in comparison to some other oils now on the market. The tractor used is a Case, 15-27. Before starting the test the motor was taken apart, the valves ground, and the carbon cleaned out of the cylinders. The pan was also removed and the crank case thoroughly washed out with kerosene. Thermometers were built in to show the temperature of the oil in the circulating system, the temperatures of the water going into the motor and after coming out of the motor, the temperature of the crank case, and the temperature of the air going through the radiator. The tractor has been testing thirty-six hours at the date of this writing, and will continue to test for sixty hours of actual testing time. Thirty hours of this time it has been pulling 85 percent load, and the next thirty it will be given 100 percent load. At the end of that time it will be subject to a maximum power test to determine what influence the oil has on that part of the tractor performance.

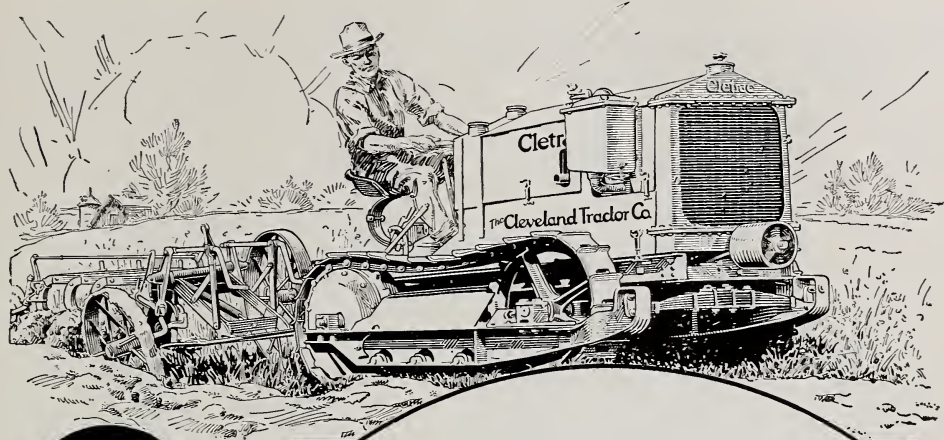
The world's record for fuel economy, .606 pounds of fuel per horse power hour, has heretofore been held by the Rumley Tractor. This Case 15-27 has reduced that record to .57 pounds of fuel per horse power hour on 85 percent load, and on the full load has done considerably better than that. However, only six hours have been given to full load and more comprehensive results will be published at the completion of the test. One of the interesting features of this test is the showers of red hot carbon bits that are blown from the exhaust pipe at frequent intervals. At the end of thirty hours the spark plugs were examined for condition and found to be as bright and clean as new plugs. During the entire thirty-six hours of actual testing time, not a drop of new oil has been added to the crank case and the oil gauge indicates that the level is practically the same as when the test was started.

More conclusive results as to wear on the machine, and maximum power development will be published at the conclusion of the test. It is planned to continue these tests with one or more oils next semester as a matter of comparison under exactly the same conditions as far as the motor is concerned, and in the hands of the same operators.

PROF. IVES APPOINTED

TEMPORARY CHAIRMAN

Prof. F. W. Ives of the department of agricultural engineering, was appointed temporary chairman of the University Section of the American Society of Agricultural Engineers, who met in Chicago recently. Through this office Prof. Ives automatically becomes chairman of the newly organized Advisory Committee of the A. S. A. E., which will work to correlate the activi-



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Agricultural students should know how Cletrac reduces the cost of raising farm produce. We will gladly send you a copy of "Selecting Your Tractor."

SPECIFICATIONS

Horsepower: 12 at drawbar, 20 at belt pulley.

Length: 96 inches.

Width: 50 inches.

Height: 52 inches.

Weight: 3420 pounds.

Turning Circle: 12 feet.

Traction Surface: About 800 square inches.

Center to Center of Tracks: 38 inches.

Belt Pulley: Diameter 8 in., face 6 inches.

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ties of the agricultural engineering division of the U. S. Department of Agriculture, experiment stations, and land grant colleges engaged in the same work.

It is the aim of this Advisory Committee to assist in obtaining a deserved portion of the national appropriations to the Department of Agriculture for research work in agricultural engineering. This accomplished, the committee will exercise its power in directing the experimental work at the various stations and colleges. This supervision will eliminate the duplication of effort in which two different stations or colleges, working independently, perform the same experiment on the same standard machinery. Under the new plan one experiment station or college department will concentrate its experimental efforts and expenditures on its assigned phase of agricultural engineering, such as: drainage, field machinery, power machinery, terracing, farm buildings, irrigation, or land reclamation. This will result in more experimental results of a complete and dependable nature and at the same time greater efficiency in the administration of funds.

The Advisory Committee will also assist in collecting and placing in a readily available form the data of experiments completed or in advanced stages of development.

EVIDENTLY

Judge—"You say the defendant turned and whistled to the dog. What followed?"

Intelligent Witness—"The dog."

Don't do anything until you do it,
and when you've done it, stop doing it.
—William Gillette.

Feed the Whole Chick



They Can Build Only as You Furnish the Material

No wonder so many grain fed chicks are so scrawny, badly feathered, light boned and sickly. They don't get enough of the necessary materials to build their bodies.

As the chart above shows, grain feeds furnish too much food for energy and heat, and less than half enough for blood, bones, nerves, vital organs, muscles and feathers. How could chicks build strong bodies when they are so short of materials needed for almost every part of the body?

Purina Chicken Chows

Purina Baby Chick Chow and Purina Chicken Chowder fed in proper proportions supply ALL the growing elements needed for thrifty growth. Special attention has been given to the vitamins and protein content, Amino acids necessary for growth which are lacking in grains are supplied in Purina Chows fed the Purina way. You can readily see then why Purina Chows can be sold on the money-back guarantee, that Purina-fed chicks will develop twice as fast during the first six weeks, as chicks fed a grain feed. Put Purina Chows to the test.

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This book contains many side-lights on poultry culture that even professional poultrymen recognize as helpful. Many years of scientific feeding are bound to develop interesting and valuable facts. This book is a brief summary of the most outstanding facts as they have come to us from the best poultrymen. Get it, postpaid, free.



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SHORT AG. DEPARTMENT

J. V. TEMPLE, Editor.

POSSIBILITIES

Down in the Miami valley was an old boar that had his jaw broken, his owner thought him worthless and decided to dispose of him at any price. Mr. Charles Wenger, a man with a vision, bought this hog at auction for the nominal sum of \$500.

He took his boar, tattered and torn, scraped its jaw and healed it. The boar was then mated to some of the best sows that could be found. After a few years growing the boar began to show his hog value, as to size, style and finish, and people began to flock in to buy him, the first price offered was \$2500, then \$5000 and then up to \$10,000.

After breeders could not buy him his sons began to demand a price heretofore unknown.

Another year added a show record. At the 1919 Ohio State Fair his get took away more premiums than any other boar and his spring pigs sold on October 29, 1919, for an average of \$407 on 55 head. This brought to light to the Duroc breeders that this old boar was a real producer.

The following spring sows bred to him sold in a bred sow sale for an average of \$631, the highest average east of the Mississippi river.

In 1920 Mr. Wenger showed his hogs at Ohio State Fair carrying away the ribbons again. Winning 1st prize boar pig in a ring of 50 and first five prizes in sow pig class in a ring of 45.

At the Indiana State Fair he won every first in sow classes, but one, having junior champion sow among the

group. He also won first, second and third in produce of dam and first and second in get of sire.

At the National Swine Show he won junior champion boar, junior champion sow, first prize young herd, first prize produce of dam and a lot of others winning in all 59 ribbons in the three shows.

Who is this wonderful old boar? Surely you all know him, Walts Top Colonel.

SHORT AG. SHOWS RED POLLED CATTLE AT INTERNATIONAL

Ford L. Stump, Short Ag. 2, stole away to the International Live Stock Exposition during the Thanksgiving recess, "dolloed up" like a herdsman, lent his hands and heart to the showing of the Stump & Etzler herd of Red Polls. It was their first appearance in the arena of the "greatest of all shows" so naturally the interest and excitement was intense. When the showing was over and the excitement abated they checked over their ribbons and found one coveted blue, seven seconds, five thirds, four fourths and one fifth. They were well pleased with this beginning, but are already strengthening their herd for a better show next season. Stump says, "It's a great life if you don't weaken," but come back every year a little stronger.

Stump's father, F. P. Stump, the senior member of the firm of Stump & Etzler, graduated from the Ag. College at State in '92 and was the first business manager of THE AGRICULTURAL STUDENT. Since leaving Ohio State he has been livestock farming in Van Wert, Ohio.

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The finest place of its kind in the country.

Pool Room :- Barber Shop

Learn to Dance—Class or Private Lessons

Dancing Every Evening

LAND GRANT COLLEGES

(Continued from page 265)

thorough research. The world has been too uneasy, has lived too much in crowds in the past four years for the cherishing of productive work which requires time for thought. All of us need more or less to sit alone with ourselves, to have time "to think but one good thought."

So, I believe the Land Grant College will meet with increasing appropriations and more careful consideration the demands made of it. And, greater yet, it will give what has always seemed to me its greatest contribution—the attitude of mind, the willingness to investigate and to experiment, to separate the false from the true, to evaluate life and to enrich it.

It would appear that the Land Grant College in addition to the task to which they have responded so generously,

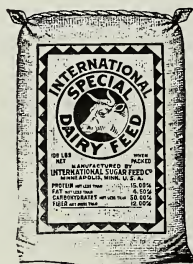
namely, the strengthening and deepening of the scientific basis for the study of the home, must undertake to teach something more of the art and the beauty as developed in the social and economic aspects of our common life. The Land Grant Colleges must send forth men and women who shall be eager and able to use their knowledge of and skill in the practices and principles of the arts of the home as a means of expression for their best endeavors and so enrich country life not only in material ways, but also in the finer and less tangible things of that spirit.

The girls all "just love" to take care of that little apartment over in the Home Ec. building.

Well, enjoy yourselves girls, it will be different when you start churning three times a week, making your own bread, and cooking for threshers.

Check Up On Feeding Results

Then Get International Prices



A poor feed is expensive at any price. The price difference between a balanced feed ration and an unbalanced one comes out of your milk pail. If your home grown grains are not balanced properly you are losing money by neglecting to feed the needed concentrates.

FEED

INTERNATIONAL SPECIAL DAIRY FEED Low Price — High Production

The quality of International Special Dairy is well known. Dairymen everywhere get higher milk production from this feed than from any other feed of similar analysis. This result is *guaranteed*. Use Special Dairy as an entire ration, or to balance your grains.

International Special Dairy Feed has taken a bigger drop in price than your dairy products have. It is priced so you still maintain your war-time margin of profit. Write us direct for information if you have no International dealer near you.

Live Agents Wanted. A live agent can quickly sell several cars of feed in each vicinity at this new, low price. Write for details.

INTERNATIONAL SUGAR FEED CO.
MINNEAPOLIS, MINN., Mills at Minneapolis and Memphis

*Pleasure**Convenience*

Drudgery

Inconvenience

SWARTZ-LIGHT

It Saves Mother

Reg. U. S. Pat. Office.

In dairy—in kitchen—in cellar—or bath-room—everywhere on the farm—Swartz Light **saves Mother**. It stops miles of needless steps. Does the washing or ironing, cream separating, churning; gives power, illumination and service to simplify Mother's work. But best of all **Mother deserves it**. Don't make her grow old before her time—for the sake of this small investment..

Great for Dad and the Boys, too

It helps them on every farm job. Swartz Light means running water—no more pumping and water carrying. Does the corn shelling—wood sawing and similar jobs. It lights the barn, lowers the fire risk, grinds tools. But get Swartz Light for **Mother**. She deserves it. Write for catalog.

SWARTZ-LIGHT

unequaled for simplicity, durability and low cost of operation.

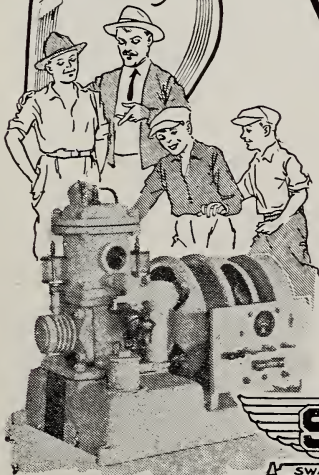
Built by

SWARTZ ELECTRIC COMPANY

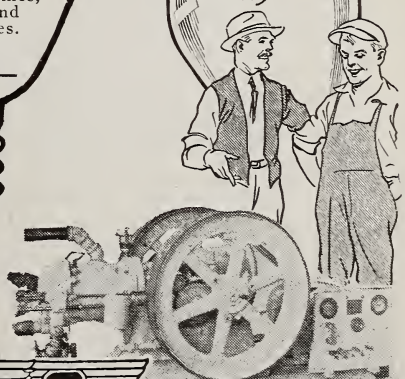
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Oldest Exclusive Makers of Electric Light & Power Plants for Farm Homes, City Homes and Business Houses.
Indianapolis, Indiana.

*Makes Work
Easier for
Your Boys*



*Keeps the
Farm Help
Happy*



"Come to our Factory—It will pay you"

ARCADIAN

Sulphate of Ammonia

Absorption of Ammonia by Soils

Sulphate of Ammonia is a highly soluble fertilizer and when added to a moist soil quickly dissolves and undergoes rapid and thorough distribution. Should it remain in the soil in this soluble condition it would be leached away during periods of heavy rainfall, as are nitrates.

Fortunately, however, chemical changes take place in the soil solution with the result that the ammonia is split apart from the Sulphate radical and is held firmly by the organic and clay constituents of the soil. Even our most sandy agricultural soils contain sufficient clay and organic matter to hold a normal application of ammonia.

From this fixed or insoluble condition the ammonia is changed into the nitrate form by the soil bacteria, and is then available as plant food. Although it is possible for the nitrogen to be washed away after the change to nitrate, very little is actually lost because the conversion of the nitrogen from ammonia to nitrates proceeds much in accordance with the needs of the growing crop and but small excess is ever present.

The drainage loss experiments of the Rothamsted Experiment Station, as given in "The Book of Rothamsted Experiments," by A. D. Hall, indicates the comparative losses of nitrogen as nitrates from the Broadbalk fields fertilized with ammonia salts and with nitrate salts. The pounds of nitrate nitrogen lost in the drainage water from the time of spring sowing of grain to harvest was as follows:

Plot 3—Unmanured	1.7 lbs.
Plot 7—100 lbs. nitrogen from ammonium salts..	18.3 lbs.
Plot 9—100 lbs. nitrogen from nitrate salts.....	45. lbs.

This ability to withstand leaching makes Sulphate of Ammonia an especially desirable fertilizer for light soils and for crops which must be fertilized at a time preceding periods of heavy rainfall.

Atlanta, Ga.
Berkeley, Cal

The *Barrett* Company

Agricultural Department, New York

Baltimore, Md.
Medina, Ohio

Merit

Judged on the merits of its contribution to human welfare the Dairy Industry ranks first in point of service to mankind.

This service stands or falls upon ability to produce milk foods with their nutritive qualities and delicious flavors unimpaired.

In like manner the distinctive, sanitary cleanliness which the use of

Indian in
circle.



in every
package

Wyandotte

Cleaner and Cleanser

provides, constitutes a service which has contributed largely to the high standard of quality maintained in the field of Dairy Production.

During the year before us you can place your orders for this great cleaner in full confidence that the quality which has given character to this product will be steadfastly sustained. It cleans clean.

The J. B. FORD CO., Sole Mnfrs., Wyandotte, Mich.

NACO BRANDS

Nitrate of Soda
Potash Salts of All Grades
Nitro PO
(15% Nitrogen, 15% Potash)
IN CAR LOTS AT LOWEST
WHOLESALE PRICES

Likewise, less than car lots for shipment at all times from Columbus, Ohio.

Also manufacturers of Arsenate of Lead, Paris Green, Bordeaux Mixture, Calcium Arsenate, etc.

Write us for anything in fertilizer or insecticide line.

Nitrate Agencies Company

408-9 Central Natl Bank Bldg.
COLUMBUS, OHIO

FOR FARM BUTTER OR CHEESE MAKING HANSEN'S Dairy Preparations

PURE, concentrated, ready to use, absolutely reliable. Giving uniformly best results in the country's finest creameries and cheese factories.

For Cheese-Making: Hansen's Rennet Tablets, Junket Tablets (for Cottage Cheese), Cheese Color Tablets.

For Butter-Making: Hansen's Danish Butter Color (4 oz. and 1 oz. bottles), Hansen's Buttermilk Tablets or Lactic Ferment Culture for perfect ripening of cream for butter and milk for cheese and commercial buttermilk.

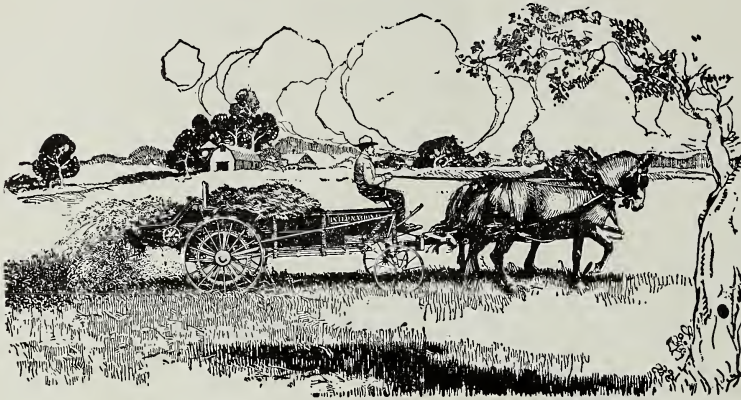
Sold by drug and dairy stores, or direct by

CHR. HANSEN'S LABORATORY

Incorporated

LITTLE FALLS, N. Y.

Interesting treatise, "The Story of Cheese," J. D. Frederiksen, free on request.



INTERNATIONAL

THE EASY-PULL MANURE SPREADER

The outstanding feature of the International Manure Spreader, among a number of exceptional features, is its light draft.

Equipped with roller bearings at seven points, it runs with almost the smoothness of a sewing machine.

Two rapidly revolving steel beaters tearing tough chunks of manure into bits; a heavy load carried on the main axle, to be moved steadily back to the beaters—these things ordinarily would tend to create heavy draft. But roller bearings in the new International Spreader smooth out the hard work and convert what otherwise would be “heavy draft” into a horse-saving, spreader-saving “Easy-Pull.”

The nearby International dealer will be glad to tell any inquirer more about the International spreader.

INTERNATIONAL HARVESTER COMPANY

CHICAGO OF AMERICA U S A
 (INCORPORATED)

92 Branch Houses in the United States

Don't Guess at What Feed is Worth

Scales are used everywhere, from drug stores to steel mills, but they are no more important anywhere than at the feed trough and behind the cows in the dairy barn. A daily record of feed consumption and milk production is necessary for intelligent feeding. Weigh the feed you are now feeding. Weigh the milk you get. Put down each day, for each cow, what the feed costs and what the milk brings.

BUFFALO CORN GLUTEN FEED

Then get BUFFALO CORN GLUTEN FEED—the milk-producing concentrate—from your dealer. Mix up a mixture with wheat bran or other mill feeds, oats, etc. Make the BUFFALO CORN GLUTEN FEED one-third, one-half or more of your mixture. Then feed this mixture to your cows, each cow according to her production, but give every cow enough to show what she can do with *good feed* when she gets a chance. Weigh each cow's feed. Then weigh her milk. A little figuring will convince you that it *pays* to feed BUFFALO CORN GLUTEN FEED.

Write us for literature giving mixtures for feeding BUFFALO CORN GLUTEN FEED—and sample if you would like one. If your dealer cannot supply you, tell us who and where he is.



THE FEED
THAT MAKES THE YIELD

Corn Products Refining Co.
New York Chicago

FEBRUARY CALENDAR

Prof. W. J. Rader's Academies of Dancing

NEIL AVE. ACADEMY, 647 Neil Ave.

Phones: Citiz. 4431, Main 6189.

Take Neil Ave car and get off at Poplar Ave.

**Beginners' Classes** organize Wednesday evening, Feb. 2. Get the very first lesson.**Afternoon Beginners' Class** Thursday, 2:30.**Private lessons** afternoons or evenings.**Assembly Nights** Monday, Thursday. Friday and Saturday, 8:15.**Advance Class**, in the front hall, Monday evenings.**Tuition** for beginners: Ladies, per term of 10 lessons, \$5.00; Gentlemen, \$6.00; Private Lessons, 5 lessons \$6.00..

Tuition can be paid \$1.00 a lesson until paid.

Private lessons can be had afternoons or evenings.

The Waltz, Two-Step, Fox Trot and One-Step taught in one term. Go to the school that gives you thorough instruction.

OAK ST. ACADEMY 827 Oak St.

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A strictly private place for Sorority and Fraternity dances.

Seniors are invited to visit

Baker Art Gallery
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FOR THEIR MAKIO PHOTOSOur Photos make the best reproduction. Special O. S. U. rates to all.
STATE AND HIGH STS.**SHOES**

A NEW DEPARTMENT AND A NEW STOCK

EMERSON SHOES for College Men**The MENSWEAR SHOP****HIGH AND FIFTEENTH****NEAR THE CAMPUS, OF COURSE**

Please mention THE AGRICULTURAL STUDENT when writing advertisers.

Sharples

SUCTION-FEED CREAM SEPARATOR

the only separator that gets
all the butterfat all the time

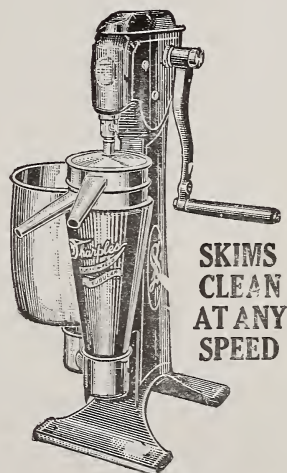
ACTUAL tests made at state colleges (New York, New Hampshire, Purdue, Vermont and others) verified the Sharples statement that the Sharples Suction-feed *skims clean at any speed*. It couldn't have been otherwise, as the Sharples mechanical principle is simply an application of a known law of nature.

"Fixed-feed" separators (all separators except the Sharples are fixed-feed) *lose* butterfat when turned *under speed*. All separators are turned under speed 95% of the time.

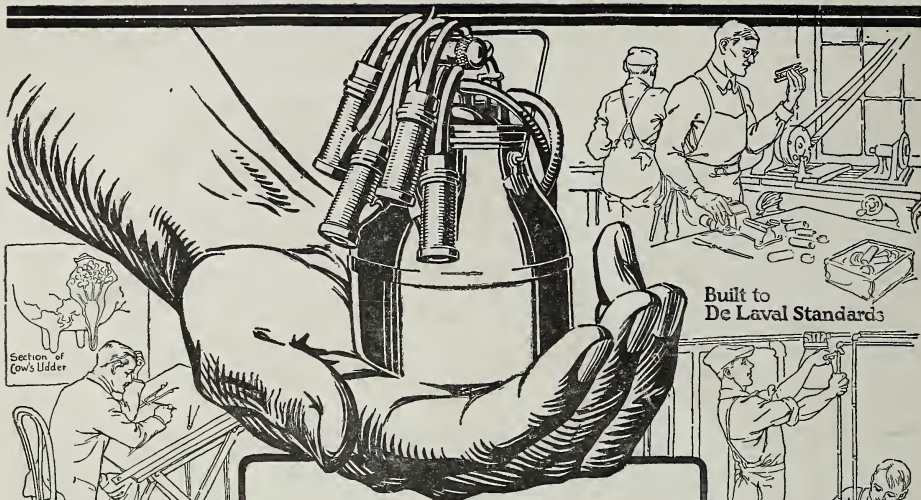
Remember then, to get *all* the butterfat *all* the time, *you must use the Sharples Suction-feed*.

THE SHARPLES SEPARATOR CO.
West Chester, Pa.

Branches:
Chicago Toronto
San Francisco



**SKIMS
CLEAN
AT ANY
SPEED**



Section of
Cow's Udder

Designed with consideration
for the cow and in observance
of the principles of milk secretion

**Designed Right
Built Right
Installed Right
It Is Right**

A Better Way of Milking

LONG ago the De Laval Company realized there is no more reason for hand milking than for harvesting a grain crop by hand. But designing a milker was not simply a problem in mechanics. A successful mechanical milker must work in harmony with the delicate organism of a living cow.

After many years of research and after four years of commercial use, the De Laval Milker has proved to be a better way of milking. It eliminates drudgery and increases the flow of milk.

Built to
De Laval Standards



Backed by De Laval
Service



Its Uniform Pulsation
Please the Cow

The De Laval will make your dairy business more
profitable and pleasant. Write for full information.

The DE LAVAL SEPARATOR COMPANY

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Sooner or later you will use a
De Laval
Milker or Cream Separator